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The Scorpionfishes (Pisces, Scorpaenidae) of the North Aegean Sea

by P. S. Economidis and H. K. Daoulas

Abstract. — In the N. Aegean Sea the following species Scorpaenidae are found : *Helicolenus dactylopterus* (Delar., 1809), *Scorpaena porcus* L., 1758, *Scorpaena scrofa* L., 1758, *Scorpaena notata* Raf., 1810, and *Scorpaena elongata* Cadenat, 1943. In the S. Aegean Sea (Rhodos) the species *Scorpaena maderensis* Val., 1833, is recorded for the first time. The species *Scorpaena elongata* Cadenat, 1943, is noted for the first time not only in the Aegean Sea, but also in the East Mediterranean Sea. In *Scorpaena notata* Raf., the number, position and size of the pores at the symphysis of the lower jaw, the number of spines of the preorbital bone, the size of the supraocular tentacle and the number of pectoral rays showed a considerable variation. In particular, possession of only one pore at the symphysis of the lower jaw is not by itself a distinguishing characteristic.

Résumé. — Dans le nord de la mer Égée ont été trouvées les espèces suivantes de la famille des Scorpaenidae : *Helicolenus dactylopterus* (Delar., 1809), *Scorpaena porcus* L., 1758, *Scorpaena scrofa* L., 1758, *Scorpaena notata* Raf., 1810, *Scorpaena elongata* Cadenat, 1943, cette dernière pour la première fois en mer Égée du Nord, ce qui est sa première mention pour toute la Méditerranée orientale. *Scorpaena maderensis* Val., 1833, a été également trouvée pour la première fois en mer Égée du Sud (Rhodes). Chez *Scorpaena notata* Raf., des caractères comme le nombre, les variations de la position et de la grandeur des pores à la symphyse mandibulaire, le nombre d'épines à l'os préorbitaire, la grandeur du tentacule supraoculaire et le nombre de rayons des nageoires pectorales, présentent une très grande variabilité. En particulier, les exemplaires de *Scorpaena notata* Raf., et *Scorpaena elongata* Cad., avec un pore unique à la symphyse mandibulaire, ne semblent pas être rares, ce qui retire toute valeur spécifique à ce seul caractère.

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The Scorpionfishes of the North Aegean Sea are little known. Our only knowledge comes from Fage (1918) who mentioned *Scorpaena porcus* from the coasts of Limnos island, Konsuloff & Drensky (1943) who reported *S. porcus*, *S. scrofa* and *S. notata* from the coasts of Alexandroupolis and Kavala, and finally from Economidis & Bauchot (1976) who besides having mentioned the aforesaid species, also recorded *Helicolenus dactylopterus* from the Thermaikos gulf as well as a *Scorpaena* sp. from the coasts of Thasos island.

A research program on the biology of Scorpionfishes carried out by the Hellenic Institute of oceanographical and fisheries investigations (IOKAE), faced a taxonomic problem which needed an early solution. *S. notata* was found to present very difficult morphological problems. This contribution gives the first results from research on the taxonomy of Scorpionfishes in the North Aegean Sea.

Materials and Methods

The specimens examined came from the collections of the Zoological Laboratory of the Thessaloniki University and the IOKAE. In this contribution as far as *Scorpaena notata* is concerned we are referring only to some observations on the pores at the symphysis of the lower jaw, the morphology of the spines of the preorbital bone, the size of the supraocular tentacle, and the number of pectoral rays. The material is now stored at the Laboratory of Zoology of the Thessaloniki University.

Results

The Scorpionfishes which were found in the North Aegean Sea with their distribution in the other Greek seas are given in table I, about which the following observations can be made :

1. *Scorpaena elongata* Cadenat, 1943, reported only from the western Mediterranean and the eastern Atlantic (Blanc & Hureau, 1973 ; Tortonese, 1975) was found for the first time in the North Aegean Sea, where it was caught on soft bottoms up to a depth of 200 m. *S. elongata* has not yet been found in the South Aegean and the Ionian Sea, where it may also live. In the collections of the Laboratory of Zoology of the Thessaloniki University are 4 specimens (TL : 135-308 mm, LZUT [1] : n^{os} GB -1434, C-308, E-35 and C-311, the lost having one pore at the symphysis) caught in the Thermaikos gulf and the Sea of Thrace. Another fish having an exceptional total length of 470 mm, was caught on the 25.V.1979 near to the Athos peninsula (fig. 1).

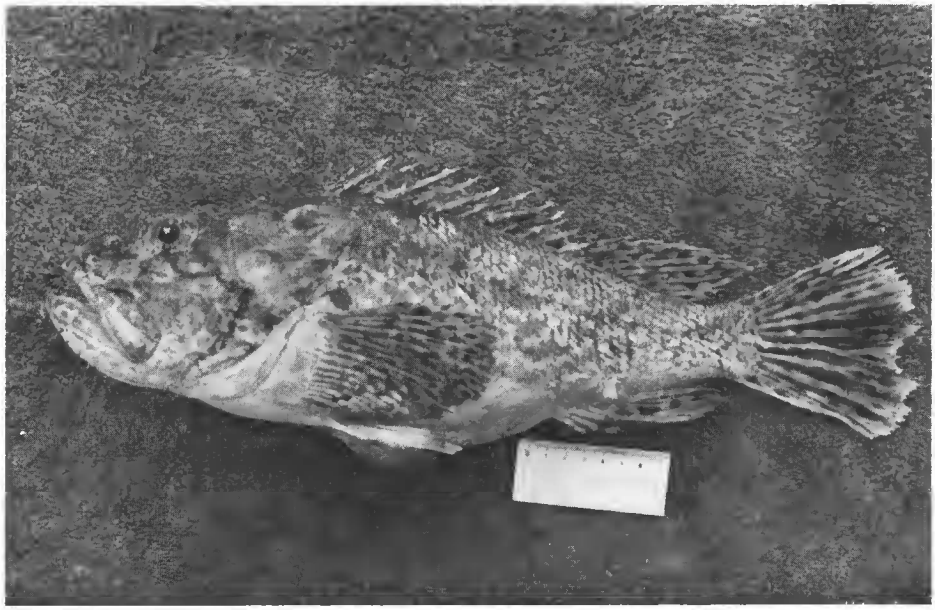

Fig. 1. — Individual *Scorpeana elongata*, TL 470 mm, fishing in 25-V-1979 north of Athos peninsula.

1. Laboratory of Zoology, University of Thessaloniki.

2. *Scorpaena maderensis* Valenc., 1833, which has not yet been found in the North Aegean Sea is already known in the Ionian Sea (Tortonese, 1975) and the Sea of Cyprus (Fröiland, 1972), and was recently found near to Rhodos island in the South Aegean Sea (3 spec. 106-117 mm ; LZUT ; GB-1437).

3. *Scorpaena notata* Rafinesque, 1810, presents a significant polymorphism revealed by the study of several specimens from the Aegean Sea. The anterior mandibular pores at the symphysis of lower jaw show a variation both in their size and their distance from each other. These conclusions result from the examination of 100 specimens. This variation in size can be observed even in the same individual. From table II we conclude that in 77 % of the specimens the distance between the pores ranges from 1-3 diameters. Besides, two specimens of our collection (nos LZUT : GB-1443, TL : 100 mm and LZUT : C-319, TL : 122 mm) and one of the Museum of Paris (MNHN nº 1975-680, TL : 110 mm) had only one pore. Also one specimen (nº LZUT : GB-1444, TL : 100 mm) had no pores at all, one specimen (LZUT : C-319, TL : 122 mm) had the pores in contact and in another specimen (LZUT : GB-664, TL : 104 mm) the surface was perforated by five small pores (fig. 2). The examination of 80 specimens indicates a significant polymorphism in the number of the spines of the preorbital bone ; 77,5 % of the specimens have 3 spines in each bone while the other 22,5 % were found to have a type different from the above mentioned, that is 2 + 2, 2 + 3, 3 + 2, 4 + 3, 3 + 4, 3 + 5 and 4 + 4. The most frequent type was the last one (4 + 4) occuring in 6,2 % of all specimens. The supraocular tentacle, measured in 100 specimens, is usually less than the 1/5 of the vertical orbit diameter (56 %). In the rest of the specimens (44 %), especially in the younger ones of less than 90 mm LT, the supraocular tentacles are more than 1/5 of the vertical orbit diameter. An important percentage (20 %) of the total of specimens have a supraocular tentacle 1/2 of the vertical orbit diameter or more. The pectoral rays, which were measured in 39 specimens, were found to be 18 in 32 specimens (82,05 %) and 17 in the 7 other specimens (17,95 %). This ratio of specimens having 18 or 17 pectoral rays is different from Eschmeyer's (1969) data (from 20 specimens, one had 17, 19 had 18).

Consequently, it is clear that the specimen MNHN nº 1975-680, referred to as *Scorpaena* sp. (Economidis & Bauchot, 1976) is in fact *Scorpaena notata* with only one pore at the symphysis of lower jaw.

Discussion and Conclusions

The finding in the Aegean Sea of the species *S. elongata* for the first time indicates a wider distribution of this Atlantic species in the area of Mediterranean Sea. So, ome more Atlantic species is added to the fish fauna of the Aegean Sea.

As far as *S. notata* is concerned, a relatively important polymorphism is present. This is shown by the variation of several morphological characters — thought to be relatively stable — from the described type. The number of pores at the symphysis of the lower jaw, the variation of their size and their distance from each other indicates that this special character should be considered with prudence. Besides *S. notata*, there are also individuals of *S. elongata* with only one pore. Consequently, this feature alone cannot be considered as a specific character if it is not combined with other features, and espe-

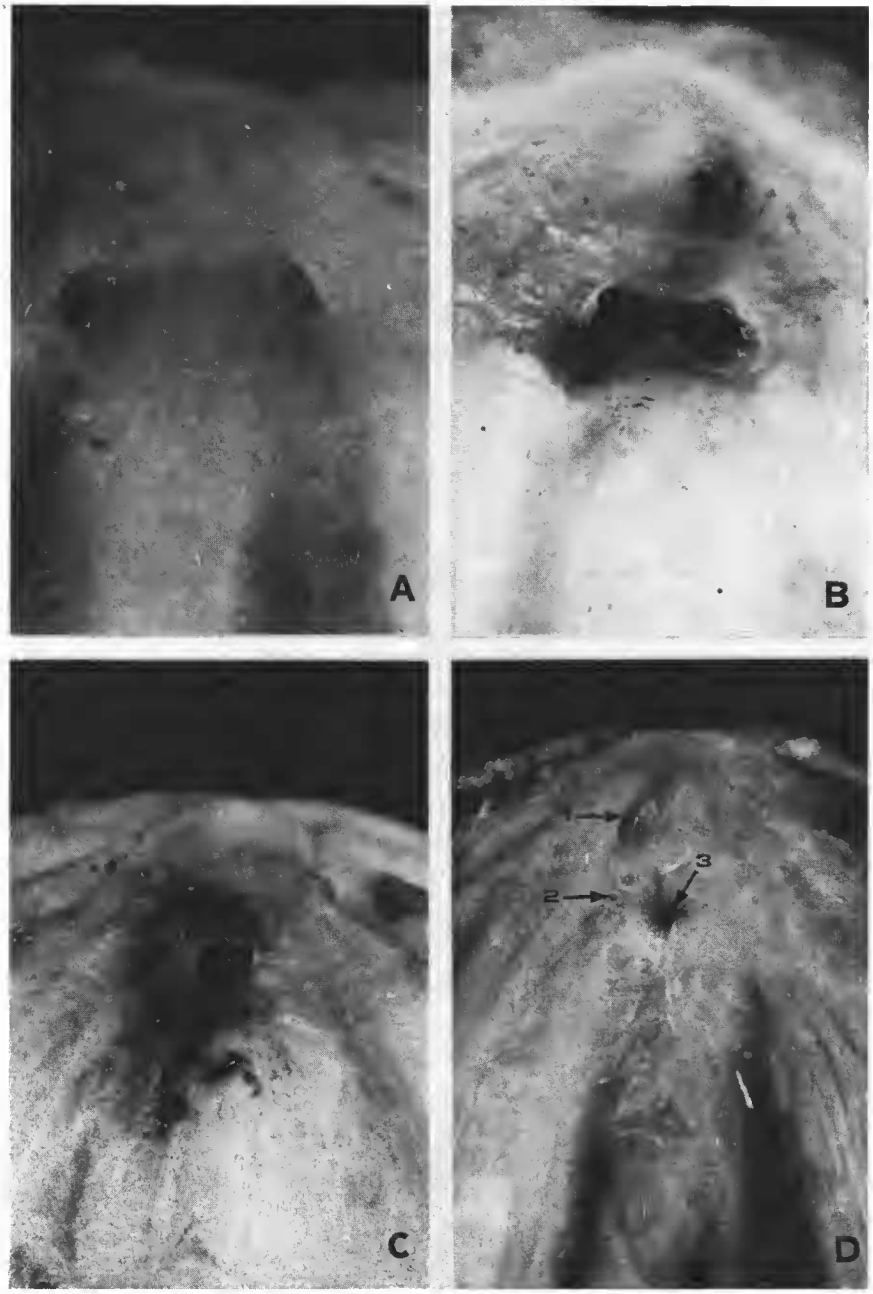

FIG. 2. — Number and position of pores at the symphysis of lower jaw in individuals *Scorpaeana notata* Raf. from Aegean Sea : A, individual (LZUT : C-319, TL 115 mm) with small pores, not in contact but distant from each other ; B, individual (LZUT : C-319, TL 112 mm) with pores in contact ; C, individual (LZUT : C-319, TL 122 mm) with a single pore ; D, individual (LZUT : GB-1444, TL 100 mm) without pores at symphysis of lower jaw (1, right pore of the anterior pair ; 2, small opening scarcely visible in the position of the right pore ; 3, simple cavity of the skin).

cially so when the sample examined is small (for example only one specimen). For *S. notata* (as shown also in the table II), it is clear that the transition from the type with two distant pores at the symphysis to the type with only one pore is through types having pores either close together or in contact. This transition may imply that the species with one pore at the symphysis (*S. annobonae*, *S. azorica*, *S. loppei* and *S. angolensis*) were evolved from *S. notata*.

Although our data on the previous mentioned characters of *S. notata* are in general agreement with the descriptions given by other authors (Cadenat, 1943 ; Boutière, 1958 ; Svetovidov, 1964 ; Eschmeyer, 1969 ; Tortonese, 1970 & 1975), the variations referred to underline the need to consider a possibly wider range of the limite of the characters studied.

Table I. — The Scorpionfishes of Greek waters.

Species	N. Aegean	S. Aegean	Ionian
Scorpaena porcus L., 1758	+	+	+
Scorpaena scrofa L., 1758	+	+	+
Scorpanea elongata Cad., 1943	+	?	?
Scorpaena notata Rafin., 1810	+	+	+
Scorpaena loppei Cad., 1943	?	?	+
Scorpaena maderensis Val., 1833	?	+	+
Helicolenus dactylopterus (Del., 1809)	+	+	+

Table II. — Relative distance between pores at symphysis of lower jaw in 100 specimens of *Scorpaena notata* from different localities of the Aegean Sea.

Pore distance	Fish number	Observations
longer than 4 diam.	1	The relative distance depended of :
3-4 »	5	a) the size of pores
2-3 »	29	b) the space of pores
1-2 »	48	
shorter than 1 »	13	
no distance	1	
only one pore	2 *	
no pore at all	1	

* One more in the Museum of Paris.

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